WHAT IS CLAIMED IS:

1. A display apparatus comprising:

(a) a light source for forming a beam of light;

(b) illumination optics for shaping and directing said beam of light;

(c) a splitter for splitting said beam of light into at least three color beams of light;

(d) a modulation optical system for each of said three color beams of light, comprising:

(1) a pre-polarizer for polarizing said beam of light to provide a polarized beam of light of a given color;

(2) a wire grid polarization beamsplitter for receiving said polarized beam of light, for transmitting said polarized beam of light having a first polarization, and for reflecting said polarized beam of light having a second polarization orthogonal to said first polarization, wherein subwavelength wires on said wire grid polarization beamsplitter face a reflective spatial light modulator;

(3) an imager field lens that provides nominally telecentric light to said reflective spatial light modulators

(4) a reflective spatial light modulator wherein said reflective spatial light modulator receives said polarized beam of light, having either a first polarization or a second polarization, and selectively modulates said polarized beam of light to encode data thereon, providing both modulated light and unmodulated light which differ in polarization;

(5) wherein said reflective spatial light modulator reflects back both said modulated light and said

unmodulated light to said wire grid polarization beamsplitter;

(6) wherein said wire grid polarization beamsplitter separates said modulated light from said unmodulated light; and

(7) a polarization analyzer that receives said modulated light, and which further removes any residual unmodulated light from said modulated light;

(8) an imaging relay lens in each color that provides an intermediate image of the reflective spatial light modulator from the modulated light for that color;

(e) a dichroic combiner for re-combining the modulated light for each given color, such that the multiple color beams form the respective intermediate images along a common optical axis to form a combined intermediate image; and

(f) a projection lens for imaging said combined intermediate image to a display screen.

2. The display apparatus as in claim 1 wherein said imager field lens is low stress or low absorption optical glass.

3. The display apparatus as in claim 1 wherein said imager field lens is fabricated from amorphous fused silica.

4. The display apparatus as in claim 1 wherein said imager field lens has uniform residual birefringence.

5. The display apparatus as in claim 1 wherein said imager field lens is constructed from two lens elements with crossed polarization axes to cancel residual retardances.

6. The display apparatus as in claim 1 wherein said imager field lens is mounted with a compliant adhesive.

7. The display apparatus as in claim 1 wherein said dichroic combiner is located in proximity to the intermediate images.

8. The display apparatus as in claim 1 wherein said dichroic combiner is a v-prism.

9. The display apparatus as in claim 1 wherein said dichroic combiner is an x-prism.

10. The display apparatus as in claim 1 wherein said dichroic combiner is a Philips prism.

11. The display apparatus as in claim 1 wherein said imaging relay lenses operate at a magnification greater than unity magnification.

12. The display apparatus as in claim 1 wherein said imaging relay lenses operate at a nominal 2x magnification.

13. The display apparatus as in claim 1 wherein said imaging relay lens is a double gauss type lens.

14. The display apparatus as in claim 1 wherein said imaging relay lens is double telecentric.

15. The display apparatus as in claim 1 wherein said illumination optics are constructed with an integrating bar and an internal intermediate image of said integrating bar.

16. The display apparatus as in claim 1 wherein said modulation optical system has at least one polarization compensator located between said wire grid polarization beamsplitter and said reflective liquid crystal device for conditioning oblique rays of said modulated beam.

17. The display apparatus as in claim 1 wherein said modulation optical system has two polarization compensators with said imager field lens located between them.

18. The display apparatus as in claim 17 wherein said polarization compensator or compensators provides corrective retardances for at least one of a group comprises of said wire grid polarization beam splitter, spatial light modulator, and imager field lens.

19. The display apparatus as in claim 1 wherein said pre-polarizer is a wire grid polarizer.

20. The display apparatus as in claim 1 wherein said polarization analyzer is a wire grid polarizer.

21. The display apparatus as in claim 1 wherein said spatial light modulator is a LCD.

22. The display apparatus as in claim 1 wherein said spatial light modulator is a vertically aligned LCD.

23. The display apparatus as in claim 1 wherein said imager field lens is part of a Ramsden eyepiece.

24. The display apparatus as in claim 1 wherein said dichroic combiner is located in proximity to the internal aperture stops of the imaging relay lenses.

25. A modulation optical system for providing modulation of an incident light beam comprising:

(a) a prepolarizer for pre-polarizing said beam of light to provide a polarized beam of light;

(b) a wire grid polarization beamsplitter for receiving said polarized beam of light, for transmitting said polarized beam of light having a first polarization, and for reflecting said polarized beam of light having a second polarization orthogonal to said first polarization, wherein subwavelength wires on said wire grid polarization beamsplitter face a reflective spatial light modulator;

(c) wherein said reflective spatial light modulator receives said polarized beam of light, having either a first polarization or a second polarization, and selectively modulates said polarized beam of light to encode data thereon, providing both modulated light and unmodulated light which differ in polarization;

(d) wherein said reflective spatial light modulator reflects back both said modulated light and said unmodulated light to said wire grid polarization beamsplitter;

(e) wherein a polarization compensator, located between said wire grid polarization beamsplitter and said reflective liquid crystal device, is provided for conditioning oblique light rays;

(f) wherein said wire grid polarization beamsplitter separates said modulated light from said unmodulated light;

(g) a polarization analyzer receives said modulated light, and which further removes any residual unmodulated light from said modulated light; and

wherein said modulation optical system further comprises an imager field lens prior to each of said reflective spatial light modulators to provide nominally telecentric light to said spatial light modulators.

26. The modulation optical system as in claim 25 wherein said imager field lens is a low stress or low absorption optical glass.

27. The modulation optical system as in claim 25 wherein said imager field lens is fabricated from amorphous fused silica.

28. The modulation optical system as in claim 25 wherein said imager field lens has uniform residual birefringence.

29. The modulation optical system as in claim 25 wherein said imager field lens is constructed from two lens elements with crossed polarization axes to cancel residual retardances.

30. The modulation optical system as in claim 25 wherein said imager field lens is mounted with a compliant adhesive.

31. The modulation optical system as in claim 25 wherein said modulation optical system has two of said polarization compensators with said imager field lens located between them.

32. The modulation optical system as in claim 25 wherein said polarization compensator or compensators provides corrective retardances for at least one of said wire grid polarization beam splitter, said spatial light modulator, or said imager field lens.

33. The modulation optical system as in claim 25 wherein said pre-polarizer is a wire grid polarizer.

34. The modulation optical system as in claim 25 wherein said polarization analyzer is a wire grid polarizer.

35. The modulation optical system as in claim 25 wherein said modulation optical system is used in an image projection or an image printing device.

36. The modulation optical system as in claim 25 wherein said spatial light modulator is a LCD.

37. The modulation optical system as in claim 25 wherein said spatial light modulator is a vertically aligned LCD.

38. A modulation optical system as in claim 25 wherein said reflective spatial light modulator receives said polarized beam of light having a first polarization state transmitted through said wire grid polarization beamsplitter.

39. A modulation optical system as in claim 25 wherein said reflective spatial light modulator receives said polarized beam of light having a second polarization state reflected from said wire grid polarization beamsplitter.

40. A modulation optical system for providing modulation of an incident light beam comprising:

(a) polarization optics including at least two polarization devices, where at least one of said polarization devices is a wire grid polarization beamsplitter, wherein said wire grid polarization beamsplitter receives said incident beam of light, and transmits a polarized beam of light having a first polarization, and reflects a polarized beam of light having a second polarization nominally orthogonal to said first polarization, wherein subwavelength wires on said wire grid polarization beamsplitter face a reflective spatial light modulator;

(b) wherein said reflective spatial light modulator receives said polarized beam of light, having either a first polarization or a second polarization, and selectively modulates said polarized beam of light to encode data thereon, providing both modulated light and unmodulated light which differ in polarization;

(c) wherein said reflective spatial light modulator reflects back both said modulated light and said unmodulated light to said wire grid polarization beamsplitter;

(d) wherein a polarization compensator, located between said wire grid polarization beamsplitter and said reflective spatial light modulator, is provided for conditioning oblique light rays;

(e) wherein said wire grid polarization beamsplitter separates said modulated light from said unmodulated light; and

(f) wherein said modulation optical system further comprises an imager field lens prior to said reflective spatial light modulator.

41. The modulation optical system as in claim 40 wherein said imager field lens provides nominally telecentric light to the spatial light modulator.

42. The modulation optical system as in claim 40 wherein said imager field lens is a low stress or low absorption optical glass.

43. The modulation optical system as in claim 40 wherein said imager field lens is fabricated from amorphous fused silica.

44. The modulation optical system as in claim 40 wherein said imager field lens has uniform residual birefringence.

45. The modulation optical system as in claim 40 wherein said imager field lens is constructed from two lens elements with crossed polarization axes to cancel residual retardances.

46. The modulation optical system as in claim 40 wherein said imager field lens is mounted with a compliant adhesive.

47. The modulation optical system as in claim 40 wherein said modulation optical system has two compensators with said imager field lens located between them.

48. The modulation optical system as in claim 40 wherein said polarization compensator or compensators provides corrective retardances for at least one of the wire grid PBS, the spatial light modulator, and the imager field lens.

49. The modulation optical system as in claim 40 wherein said modulation optical system further comprises a pre-polarizer.

50. The modulation optical system as in claim 49 wherein said pre-polarizer is a wire grid polarizer.

51. The modulation optical system as in claim 40 wherein said modulation optical system further comprises a polarization analyzer.

52. The modulation optical system as in claim 51 wherein said polarization analyzer is a wire grid polarizer.

53. The modulation optical system as in claim 40 wherein said modulation optical system receives an incident light beam that is pre-polarized.

54. A modulation optical system as in claim 40 wherein said reflective spatial light modulator receives said polarized beam of light having a first polarization state transmitted through said wire grid polarization beamsplitter.

55. A modulation optical system as in claim 40 wherein said reflective spatial light modulator receives said polarized beam of light having a second polarization state reflected from said wire grid polarization beamsplitter.

56. The modulation optical system as in claim 40 wherein said modulation optical system is used in an image projection or an image printing device.

57. The modulation optical system as in claim 40 wherein said spatial light modulator is an LCD.

58. The modulation optical system as in claim 40 wherein said spatial light modulator is a vertically aligned LCD.

59. A modulation optical system for providing modulation of an incident light beam comprising:

(a) polarization optics including at least two polarization devices, where at least one of said polarization devices is a polarization beamsplitter, wherein said polarization beamsplitter receives said incident beam of light, and transmits a polarized beam of light having a first polarization, and reflects a polarized beam of light having a second polarization nominally orthogonal to said first polarization;

(b) wherein a reflective spatial light modulator receives said polarized beam of light, having either a first polarization or a second polarization, and selectively modulates said polarized beam of light to encode data thereon, providing both modulated light and unmodulated light which differ in polarization;

(c) wherein said reflective spatial light modulator reflects back both said modulated light and said unmodulated light to said polarization beamsplitter;

(d) wherein a polarization compensator, located between said polarization beamsplitter and said reflective spatial light modulator, is provided for conditioning oblique light rays;

(e) wherein said polarization beamsplitter separates said modulated light from said unmodulated light; and

(f) wherein said modulation optical system further comprises an imager field lens prior to said reflective spatial light modulator.

60. The modulation optical system as in claim 59 wherein said polarization beamsplitter is a MacNeille type prism.

61. The modulation optical system as in claim 59 wherein said polarization beam splitter is a wire grid.

62. The modulation optical system as in claim 59 wherein said imager field lens provides nominally telecentric light to the spatial light modulator.

63. The modulation optical system as in claim 59 wherein said imager field lens is a low stress or low absorption optical glass.

64. The modulation optical system as in claim 59 wherein said imager field lens is fabricated from amorphous fused silica.

65. The modulation optical system as in claim 59 wherein said imager field lens has uniform residual birefringence.

66. The modulation optical system as in claim 59 wherein said imager field lens is constructed from two lens elements with crossed polarization axes to cancel residual retardances.

67. The modulation optical system as in claim 59 wherein said imager field lens is mounted with a compliant adhesive.

68. The modulation optical system as in claim 59 wherein said modulation optical system has two compensators, with the imager field lens located between them.

69. The modulation optical system as in claim 59 wherein said polarization compensator or compensators provides corrective retardances for at least one of the wire grid PBS, the spatial light modulator, and the imager field lens.

70. The modulation optical system as in claim 59 wherein said modulation optical system further comprises a pre-polarizer.

71. The modulation optical system as in claim 70 wherein said pre-polarizer is a wire grid polarizer.

72. The modulation optical system as in claim 59 wherein said modulation optical system further comprises a polarization analyzer.

73. The modulation optical system as in claim 70 wherein said polarization analyzer is a wire grid polarizer.

74. The modulation optical system as in claim 59 wherein said modulation optical system receives an incident light beam that is pre-polarized.

75. A modulation optical system as in claim 59 wherein said reflective spatial light modulator receives said polarized beam of light having a first polarization state transmitted through said polarization beamsplitter.

76. A modulation optical system as in claim 59 wherein said reflective spatial light modulator receives said polarized beam of light having a second polarization state reflected through said polarization beamsplitter.

77. The modulation optical system as in claim 59 wherein said modulation optical system is used in an image projection or an image printing device.

78. The modulation optical system as in claim 59 wherein said spatial light modulator is an LCD.

79. The modulation optical system as in claim 59 wherein said spatial light modulator is a vertically aligned LCD.

80. A display apparatus comprising:

(a) a light source for forming a beam of light;

(b) illumination optics for shaping and directing said beam of light;

(c) a splitter for splitting said beam of light into at least three color beams of light;

(d) a modulation optical system for each of said three color beams of light, comprising:

(1) a pre-polarizer for polarizing said beam of light to provide a polarized beam of light of a given color;

(2) a transmissive spatial light modulator wherein said transmissive spatial light modulator receives said polarized beam of light, and selectively modulates said polarized beam of light to encode data thereon, providing both modulated light and unmodulated light which differ in polarization;

(3) an imager field lens that provides nominally telecentric light to said transmissive spatial light modulators

(4) wherein a polarization analyzer separates said modulated light from said unmodulated light; and

(5) an imaging relay lens in each color that provides an intermediate image of the transmissive spatial light modulator from the modulated light for that color;

(e) a dichroic combiner for re-combining the modulated light for each given color, such that the multiple color beams form the respective intermediate images along a common optical axis to form a combined intermediate image; and

(f) a projection lens for imaging said combined intermediate image to a display screen.

81. A display apparatus as in claim 80 wherein said polarization analyzer is a wire grid polarizer or a wire grid polarization beam splitter.

82. A display apparatus as in claim 80 that further comprises a polarization compensator.

83. A display apparatus as in claim 80 wherein said transmissive spatial light modulator is a Liquid Crystal Display (LCD).

84. A display apparatus comprising:

(a) a light source for forming a beam of light;

(b) illumination optics for shaping and directing said beam of light;

(c) a splitter for splitting said beam of light into at least three color beams of light;

(d) a modulation optical system for each of said three color beams of light, comprising:

(1) an angle sensitive optic for directing light into a digital micromirror device;

(2) an imager field lens that provides nominally telecentric light to said digital micromirror device;

(3) a digital micromirror device wherein said digital micromirror device receives said beam of light, and selectively modulates said beam of light to encode data thereon, providing both modulated light and unmodulated light which differs in angular directionality over light;

(4) wherein said digital micromirror device reflects back both said modulated light and said unmodulated light to said angle sensitive optic;

(5) wherein said angle sensitive optic separates said modulated light from said unmodulated light; and

(6) an imaging relay lens in each color that provides an intermediate image of the digital micromirror device from the modulated light for that color;

(e) a dichroic combiner for re-combining the modulated light for each given color, such that the multiple color beams form the respective intermediate images along a common optical axis to form a combined intermediate image; and

(f) a projection lens for imaging said combined intermediate image to a display screen.

85. A display apparatus as in claim 84 wherein said angle sensitive optic is a Philips prism.

86. A modulation optical system for providing modulation of an incident light beam comprising:

(a) polarization optics including at least two polarization devices, where at least one of said polarization devices is a polarization beamsplitter, wherein said polarization beamsplitter receives said incident beam of light, and transmits a polarized beam of light having a first polarization, and reflects a polarized beam of light having a second polarization nominally orthogonal to said first polarization;

(b) wherein a reflective spatial light modulator receives said polarized beam of light, having either a first polarization or a second polarization, and selectively modulates said polarized beam of light to encode data thereon, providing both modulated light and unmodulated light which differ in polarization;

(c) wherein said reflective spatial light modulator reflects back both said modulated light and said unmodulated light to said polarization beamsplitter;

(d) wherein said polarization beamsplitter separates said modulated light from said unmodulated light; and

(e) wherein said modulation optical system further comprises an imager field lens prior to said reflective spatial light modulator.